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Schaer

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(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(58) **Field of Search** 606/41; 600/374, 600/381, 383, 549; 607/99, 113, 122

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,966,597		10/1990	Cosman	606/50
5,373,850	*	12/1994	Kohno et al.	128/692
5,500,012		3/1996	Brucker et al.	607/122
5,531,781	*	7/1996	Alferness et al.	607/122
5,549,109	*	8/1996	Samson et al.	128/642
5,582,609		12/1996	Swanson et al.	606/39
5,682,899	*	11/1997	Nashef et al.	600/505
5,706,809	*	1/1998	Littmann et al.	600/381
5,769,847	*	6/1998	Panescu et al.	606/42
5,885,278	*	3/1999	Fleischman	606/41
6,129,724	*	10/2000	Fleischman et al.	606/41

* cited by examiner

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(57) **ABSTRACT**

A low profile intravascular electrophysiology (EP) device for the formation of linear lesions which has particular utility in the treatment of atrial fibrillation and flutter. The EP device of the invention has an elongated shaft with a proximal section, a distal section, and a plurality of at least partially exposed electrodes disposed on an outer surface of the distal section. The electrodes are spaced along a length of the distal section with at least one temperature sensor located between adjacent electrodes. High frequency, e.g. RF, electrical energy delivered to the electrodes on the distal shaft section of the EP device will form a linear lesion which terminates the fibrillation or flutter.

35 Claims, 3 Drawing Sheets